TERNATIONAL FOOD INFORMATION SERVICE

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FAB 3

NATURAL AND SYNTHETIC SWEETENERS

SELECTED FROM VOLUME 7
FOOD SCIENCE AND TECHNOLOGY ABSTRACTS

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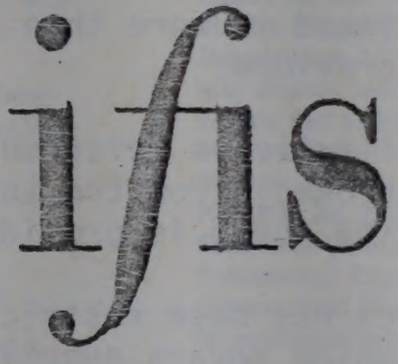
monwealth Agricultural Bureaux, Farnham Royal, Bucks; Institut fur Dokumentationswesen, kfurt am Main; Institute of Food Technologists, Chicago; Centrum voor Landbouwpublikaties Landbouwdocumentatie (Pudoc), Wageningen; Zentralstelle fur maschinelle Dokumentation– kfurt am Main.

NATURAL AND SYNTHETIC SWEETENERS

VOLUME 7

FOOD ANNOTATED BIBLIOGRAPHY No. 3



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SHINFIELD, READING RG2 9BB
ENGLAND.

ISBN 0 86014 115 2

First published in 1976

INTRODUCTION

Food Annotated Bibliographies (FABs) are collections of abstracts on specific topics in food science and technology. The topics are chosen by the staff of the International Food Information Service as being of particular interest or importance. The topics normally interest individual workers, who may not require the full information provided in Food Science and Technology Abstracts, from which the abstracts for FABs are taken. The size and the cost of the FABs are controlled as much as possible with the interests of individual workers in mind.

Titles of the FABs now available are given on the back cover of this booklet. New titles are being added at the rate of about 10 per year. For up-to-date lists of FABs or suggestions for new topics please write to the address given overleaf. New subjects are searched for at least the five most recent volumes of Food Science and Technology Abstracts. Thereafter each FAB is updated monthly. Copies of each months abstracts on any topic may be obtained as indicated on the back cover of this publication. At the end of each volume of up-dating, the abstracts are merged and made available as a separate supplement to the original FAB.

Some of the larger FABs have been divided into sections to facilitate use. Abstracts are not printed in more than one section. The larger FABs also have subject indexes provided.

Copies of all original articles referred to in the abstracts may be bought (or occasionally borrowed) from the International Food Information Service. A form for ordering these is provided at the end of this FAB.

Coverage of the subject has been restricted to that of Food Science and Technology Abstracts, which covers over 1200 of the important food journ patents from 20 countries and books published world-wide. Every effort is made to include all significant references, but editorial discretion is used on the many articles of borderline interest. If the reader particularl needs an exhaustive search of the subject, we will be pleased to provide any other references that we have available. We would, in any case, encourage readers to write or telephone us with any comments or queries that they may have.

H. BROOKES

ASSISTANT EDITOR

1

Food and drink in Britain. [Book]
Wilson, C. A.
472pp. ISBN 0 09 456040 4 (1973) [many ref. En] London, UK; Constable & Co. Ltd. Price £5.00

The history of the choice and preparation of food in Great Britain from the Stone Age to the industrial revolution is described. The subject is covered under the headings: Seafish, freshwater fish and salt (pp. 16-59); Game beasts and tame beasts (pp. 60-111); Wild fowl, tame fowl and eggs (pp. 112-148); Milk, cheese and butter (pp. 148-185); Cereals, potherbs and pottage (pp. 186-228); Bread, cakes and pastry (pp. 229-274); Spices, sweeteners, sausages and puddings (pp. 274-322); Fruit and salad vegetables (pp. 323-364); Drink in Britain (pp. 365-417); The nineteenth century and after (pp. 418-421). A detailed 14-pp. subject index is given. JN

2

Structural functions of taste in the sugar series: sensory properties of deoxy sugars.
Birch, G. G.; Lee, C. K.
Journal of Food Science **39** (5) 947-949 (1974) [16 ref. En] [Nat. Coll. of Food Tech., Weybridge, Surrey, UK]

A number of mono- and dideoxy derivatives of the analogous and conformationally stable and well-defined models, α,α-trehalose and methyl α-D-glucopyranoside, were tested. Their sensory properties are described and compared with those of some previously known monodeoxy sugars. [See also FSTA (1974) **6** 5L275.] IFT

3

Saccharin - a European assessment. A report.
Crampton, R. F.
Toxicology **1** (3) 233-236 (1973) [En] [British Ind. Biol. Res. Assoc., Woodmansterne Road, Carshalton, Surrey, UK]

This article, which is reprinted from the BIBRA Information Bulletin 1973 **12** (6), summarizes essential points that arise from recent work on saccharin. It is concluded that recent data do not demonstrate that saccharin is a carcinogen. It is however recommended that consideration should be given to the future use of saccharin in special situations such as infants' and children's food. VJG

4

[Analysis of saccharin as trichloromethylthio derivative by thin layer and gas chromatography.]
Makita, M.; Yamamoto, S.; Yoshihara, K.
Journal of Hygienic Chemistry [Eisei Kagaku] **19** (6) 297-301 (1973) [12 ref. Ja] [Fac. of Pharmaceutical Sci., Okayama Univ., Tsushima, Okayama-shi, Okayama, Japan]

Saccharin was converted to the trichloromethylthio derivative (i) by treatment with perchloromethylthiol in aqueous alkaline solution. The derivative was extracted with carbon tetrachloride and chromatographed on a 1.5% OV-1 phase supported on Shimalite W at 190°C using pyrene as an internal standard. The average recovery of supplemented saccharin from orange juice and canned oranges was found to be 99%. A sensitive method for the detection of saccharin by TLC of (i) had also been developed. A quantity of 1-2 μg of the derivative could be detected on TLC layer by spraying the developed plate with 1% ethanolic solution of resorcinol or 0.06% solution of permanganate in acetone. HK

5

Health laws and regulations - Rhodesia.
World Health Organization
International Digest of Health Legislation **24** (4) 905-922 (1973) [En] [Geneva, Switzerland]

A selection of Rhodesian health laws and regulations is presented including the following which relate to food hygiene: An Act (No. 25 of 1971) to provide for the sale, importation and manufacture for sale of food in a pure state; to prohibit the sale, importation and manufacture for sale of food which is falsely described; to provide for the fixing of standards relating to food; and to repeal the Sale of Foods and Drugs Act; Public Health (Metal Content in Food Vessels) Regulations, 1971, which prescribe that no person may import, sell, have in his possession or use vessels that yield to a 4% acetic acid solution (heated on a water batch for 30 min) in excess of mg/kg: Sb, 1.0; As, 1.0; Cd, 1.0; Cu, 20.0; F, 1.0; Pb, 1.0; Ni, 50.0; Sn, 250.0; and Zn, 50.0; Food and Food Standards (Preservatives, Additives and Prohibited Substances) Regulations, 1972, Rhodesia Government Notice No. 1210 of 1972, which relate to poisonous substances, pesticides, harmful and spoilage microorganisms, preservatives, flavouring, colouring, thickening substances, emulsifiers, and stabilizers, synthetic sweetening substances); and Food and Food Standards (Flour, Bread and Cereals) Regulations, 1972, Rhodesia Government Notice No. 1211 of 1972. VJG

6

Food additives. Mannitol; removal from GRAS status and establishment of interim food additive regulation for direct human food use.
United States of America, Food & Drug Administration
Federal Register **39** (185, Sept. 23) 34178-34180 (1974) [En] [Washington, DC, USA]

Mannitol, 1,2,3,4,5,6-hexanehexol, produced by electrolytic reduction, or transition metal catalytic hydrogenation of sugar solutions containing, glucose or fructose, may be used under the Federal Food, Drug and Cosmetic Act until current feeding

studies are completed as follows: 98% in pressed mints and 5% in all other hard candy and cough drops, 31 in chewing gum, 40 in soft candy, 8 in confections and frostings, 30 in nonstandardized jams and jellies, and 2.5 in all other foods. CAS

7

High efficiency wet corn milling.
Anon.
Food Processing **35** (9) 27 (1974) [En]
Details are given of a compact, highly instrumented corn wet-milling plant built by Cargill Inc., Dayton, Ohio, which converts 40 000 bushels of corn a day into syrup, starch and feed protein. AA

8

Sweetening ingredients in the canning industry.
Walter, R. D.
Food Production/Management **97** (3) 10, 12-13 (1974) [En] [CPC Int. Inc., International Plaza, Englewood Cliffs, New Jersey, USA]
The characteristics of sweeteners used in canned foods are discussed with special reference to: sucrose; invert sugars; dextrose; and corn syrup. AA

9

[Lactose hydrolysis of raw milk by Saccharomyces lactis lactase. I.]
Sukegawa, K.
Journal of the Japanese Society of Food and Nutrition [Eiyo to Shokuryo] **27** (1) 7-11 (1974) [21 ref. Ja, en] [Dept. of Dairy Sci., Obihiro Zootech. Univ., Hokkaido, Japan]
A new European commercial preparation of purified lactase from Sacc. lactis and lactase activity equivalent to 35 800 ONPG (O-nitrophenyl-βD-galactopyranoside) units/g in raw milk, and showed no proteolytic activity towards milk protein. Addition of 1 mg lactase preparation/ml to milk resulted in complete hydrolysis of the lactose after about 30 min at 37°C. Lactase-treated milk became brown in colour when heated at ≥95°C for 10 min. Lactase treatment had no appreciable effect on flavour quality of the milk; but intensity of sweetness was proportional to lactase concn. [From En summ.] CDP

10

Ion-selective electrodes sensitive to organic ions. I. The saccharin electrode.
Hazemoto, N.; Kamo, N.; Kobatake, Y.
Journal of the Association of Official Analytical Chemists **57** (5) 1205-1208 (1974) [10 ref. En] [Dept. of Physical Chem., Fac. of Pharmaceutical Sci., Hokkaido Univ., Sapporo, Japan 060]
An ion-selective electrode responsive to saccharin was made by dissolving an ion association which exists between iron(II)-bathophenanthroline chelate and saccharin in nitrobenzene. The electrode developed was capable of measuring saccharin ion concn. in the presence of other sweetening substances, e.g., saccharose, glucose, sodium cyclamate, and sorbitol, over the concn. range of 10^{-1} to 10^{-5}M. AS

11

Health laws and regulations - El Salvador.
World Health Organization
International Digest of Health Legislation **24** (4) 778-779 (1973) [En] [Geneva, Switzerland]
A selection of El Salvador health laws and regulations is presented including the following which relate to food hygiene: Decree No. 586 of 11 Dec., 1969, declaring the chemical products known as sodium, calcium, magnesium and potassium cyclamates to be harmful to health (deals with restrictive provisions applicable to cyclamates); Decree No. 588 of 11 Dec., 1969, which embodies the Law on the sanitary inspection of meat, repeals all previous contrary provisions and aims to regulate the sanitary inspection of meat and meat products in public and private slaughterhouses, in industrial establishments and in retail sales premises; and Decree No. 48 of 22 Dec., 1971, which embodies regulations for the implementation of the Law to promote the hygienic production of milk and milk products and to regulate their sale. VJG

12

[Direct hydrolysis of starchy raw materials.]
Grzeskoviak, M.; Remiszewski, M.
Przemysl Spozywczy **28** (2) 62-65 (1974) [6 ref. Pl, ru, en, fr, de]
Methods of direct enzymic hydrolysis of starchy raw materials (maize in particular) are reviewed and flow sheets of maize preparation for hydrolysis and maize syrup production as well as a components' balance diagram are presented. SKK

13

[Artificial sweeteners.]
Takeda Chemical Industries Ltd.
Japanese Patent 4 932 070 (1974) [Ja]
Dipeptide esters such as L-aspartyl-L-aspartic acid α-methyl-β-isopropyl ester are employed as food sweeteners. IFT

14

Sweetening composition.
Lontz, J. F.; Alonzo, R. T. d'
United States Patent 3 833 745 (1974) [En]
A non-toxic, low calorie sweetening composition derived from a selective and critical balance of amino acids comprises a non-benzenoid base

sweetener, a synergist with a benzenoid substituent and an intensifier with an amido configuration, collectively formulated with a polyhydric carrier. IFT

15

New data support safety of cyclamate, Abbott Laboratories petitions FDA for acceptance.
O'Brien, M. T.
Food Product Development 7 (10) 68, 70 (1973) [En]

Work carried out in Germany to check the findings of the 1967 US research which led to the original restrictions and subsequent banning of cyclamates is reported. 832 Sprague-Dawley rats were subjected to continuous feeding with cyclamate, saccharin, combined cyclamate and saccharin and cyclohexylamine. It was concluded that the rats tolerated the sweetener and mixtures of sweeteners particularly well. Test animals showed no significant depression of body wt. and random blood chemistry examinations showed no pathological changes. The cyclamate doses used were calculated at 80 to 240 times as great as normal human intake. No carcinogenic or chronically toxic activities were detected. On the basis of this and other studies carried out throughout the world, Abbott Laboratories of North Chicago, USA petitioned the FDA asking food additive status for cyclamate (Nov. 15, 1973). VJG

16

New sweetener for low-calorie drinks/foods.
Anon.
Food Processing 35 (10) 68-69 (1974) [En]

Details are given of EQUA-C (Aspartame), a new sweetener with 180 times the sweetening power of glucose, which has received FDA approval for use in certain classes of foods effective from July 26, 1974. The sweetener permits the development of low calorie foods without the undersirable bitter aftertaste often associated with low calorie products. It also has a synergistic effect with various food flavours, especially fruits, and a synergistic effect with other sweeteners. AA

17

[Organoleptic analysis of sweeteners and sweet substances.] [Lecture]
Watanabe, H.
Japan Analyst [Bunseki Kagaku] 23 (8) 957-961 (1974) [49 ref. Ja]

18

Sensory perception of sweetness.
Moskowitz, H. R.
Cereal Science Today 19 (7) 262-265, 279 (1974) [12 ref. En] [US Army Natick Lab., Natick, Massachusetts 01760, USA]

Aspects of sweetness perception considered are: sweetness quality; sweetness intensity (strength) and its measurement by direct matching, category scaling and ratio scaling; and sweetness pleasantness (hedonics). VJG

19

[Lactose in confectionery for diabetics.]
Milchzucker in Diabetikersüsswaren.
Goller, H.
International Review for Sugar and Confectionery 27 (11) 489-491 (1974) [17 ref. De]

After a brief discussion of the dietary requirements of diabetics, various natural and synthetic sweetening agents (fructose, lactose, polyols, dulcin, cyclamates, saccharin) suitable for use in confectionery for diabetics are discussed, with reference to cost and relative sweetness. Relatively low-cost mixtures suggested include lactose + fructose and mixtures of lactose with cyclamates and/or saccharin. AJDW

20

Amino acid, peptide, protein and isomerised glucose sweeteners: some observations. [Lecture]
Hawley, H. B.
Sucrerie Belge 93 (11) 455-460 (1974) [33 ref. En, de, fr, nl]

Recent developments in non-sugar-sweeteners are briefly discussed, including aspartyl-phenylalanine esters, the proteins miraculin (from Synsepalum dulcifium, miracle fruit), monellin (from Dioscoreophyllum cumminsii) and thaumatin and isomerized glucose syrup produced by continuous conversion of starch by means of immobilized enzymes (amyloglucosidase and glucose isomerase). The legal position and potential significance of these products are briefly considered. RM

21

Sweetness and sweeteners.
Birch, G. G.
Soft Drinks Trade Journal 28 (12) 442-444 (1974) [12 ref. En] [Nat. Coll. of Food Tech., Univ. of Reading, Weybridge, Surrey, UK]

Common and rare types of food sugar are listed together with their sweetness and ring structure. The relative sweetness of artificial sweeteners and the type of molecule are tabulated. A comparison is made of the structures of the carbohydrate and artificial sweetners in order to identify the features of the latter which are responsible for their intense sweetness. Sweetening agents or principles of recent interest are also considered. VJG

22

Sweeteners in perspective.
Inglett, G. E.
Cereal Science Today 19 (7) 258-261, 292-295 (1974) [25 ref. En] [N. Regional Res. Lab.,

Peoria, Illinois 61604, USA]
Aspects considered are: sweeteners from starch; noncaloric sweeteners; intensely sweet naturally occurring compounds (stevioside from Stevia rebaudiana, glycyrrhizin from Glycyrrhiza glabra, dihydrochalcones); taste modification (miracle fruit; serendipity berries; protein sweeteners from katemfe (Thaumatococcus daniellii); and the probe theory of sweetness. VJG

23

Status of cyclamates: July 1974
Craig, T. A.
Cereal Science Today **19** (7) 273-274 (1974) [En]
[Abbott Lab., N. Chicago, Illinois, USA]
The position of cyclamate sweeteners is reviewed from their initial marketing in 1950 to their eventual banning in the US in 1970. Experiments carried out since 1970 at Abbott Laboratories indicate that cyclamate does not produce the adverse effects some earlier studies suggested. On the basis of this, Abbott Laboratories filed a Food Additive Petition with the FDA in 1973, to establish food additive status for cyclamate in the US. VJG

24

[Sweetening compositions.]
Ken Hayashibara
Japanese Patent 4 940 949 (1974) [Ja]
Sweetening compositions containing oligoglucosyl sucrose are obtained from a mixture of liquified starch, sucrose and cyclodextrin glycosyl transferase. IFT

25

[Sweetening compositions.]
Ken Hayashibara
Japanese Patent 4 940 950 (1974) [Ja]
Sweetening compositions containing oligoglucosyl fructose are obtained from a mixture of liquified starch, fructose and cyclodextrin glycosyl transferase. IFT

26

[Fructose modified sugar.]
Hayashibara, T.
Japanese Patent 4 937 251 (1974) [Ja]
Malto-oligo sugar having a fructose terminal group and useful as a sweetener is prepared by enzymically reacting a liquified starch with a fructose-containing sugar. IFT

27

Dry molasses ..... a 'natural' sweetener.
Anon.
Food Processing **35** (11) 24-25 (1974) [En]
The potential of molasses as a 'natural' sweetener is discussed. Molasses, available in either liquid or the more convenient dry form, can be used to impart colour to foods, eliminating the need for artificial colouring. Molasses has its own unique characteristic flavour which can be used to impart desired flavour in formulated food, enhance other flavours, or to mask an undesirable flavour. Present major usage of molasses is in dark breads; condiments such as Worcestershire sauce and soy sauce; cake mixes, including gingerbreads; canned baked beans; sauces; and in other products as a replacement for brown sugar. AA

28

Xylitol - a new substitute for sugar in foods.
[Conference proceedings]
Voirol, F.
IV International Congress of Food Science and Technology **1d**, 15 (1974) [En] [Productos Roche, Basle, Switzerland]
Properties and applications of xylitol as sugar-substitute are discussed. Its insulin-independence makes it suitable for diabetic diets. RM

29

Aspartame: properties, use, present status.
[Conference proceedings]
Scott, D.
IV International Congress of Food Science and Technology **1d**, 14 (1974) [En] [Searle Biochemics, Div. of G. D. Searle & Co., Box 5110, Chicago, Illinois 60680, USA]
The nutritive and organoleptic properties, metabolism, uses and legal status of aspartame (L-aspartyl-L-phenylalanine methyl ester) are discussed. While its taste is nearly identical with that of sugar, it contributes practically no colories thanks to its amino acid nature. In addition to its use as a sweetneer it has flavour potentiating properties and is synergistic with other sweeteners. RM

30

Flavor modification.
Harvey, R. J. (Mirlin Corp.)
United States Patent 3 849 555 (1974) [En]
Sour and bitter tasting foods are rendered sweet tasting by contacting the tongue with a material rich in miraculin, the taste-modifying principle of Synsepalum dulcificum Daniell (miracle fruit) prior to ingestion. IFT

31

Sweetening agent.
Cook, M. K. (MacAndrews & Forbes Co.)
United States Patent 3 851 073 (1974) [En]
A sweetening agent comprises ammoniated

glycyrrhizin and a 5'nucleoside in an amount which represses the liquorice flavour of the ammoniated glycyrrhizin. IFT

32

Short-term toxicity of cyclohexylamine hydrochloride in the rat.
Gaunt, I. F.; Sharratt, M.; Grasso, P.; Lansdown, A. B. G.; Gangolli, S. D.
Food and Cosmetics Toxicology **12** (5/6) 609-624 (1974) [35 ref. En] [British Ind. Biol. Res. Assoc., Woodmansterne Road, Carshalton, Surrey, SM5 4DS, UK]

Cyclohexylamine is a metabolite of the cyclamate sweeteners sodium and calcium salts of cyclohexylsulphamate. As part of the BIBRA safely evaluation programme to assess the effects of (i) cyclohexylamine hydrochloride over a short-term (13 wk), groups of 15 male and 15 female rats were fed diets containing 0 (control), 600, 2000 or 6000 ppm (i). No changes in the haematological examinations, serum analyses or urinary cell excretion values were associated with (i) treatment. The no-untoward-effect level established for (i) in this study was 600 ppm in the diet, a level approx. equal to 30 mg/kg/day. This would give a calculated acceptable daily intake of 0.3 mg (i)/kg/day or approx. 20 mg/day for a 70-kg adult. VJG

33

[Chemical structure and sweet taste of isocoumarins and related compounds. V.]
Yamato, M.; Sato, K.; Hashigaki, K.; Ishikawa, T.; Oki, M.; Koyama, T.
Journal of the Pharmaceutical Society of Japan [Yakugaka Zasshi] 94 (3) 359-361 (1974) [7 ref. Ja, en] [Fac. of Pharm. Sci., Univ. of Okayama, Japan]

On the basis of previous findings, the relationship between the structure and appearance of sweet taste was examined by synthesis of 3-hydroxy-4-methoxybenzylaniline (III), which is the structural conversion product of β-(3-hydroxy-4-methoxyphenyl)ethylbenzene (I), by application of the theory of bioisosterism; III had a fairly sweet taste while N-ethyl-3-hydroxy-4-methoxybenzylaniline tasted bitter. Modification of III molecule with a propyl group, which is considered to be equivalent to the phenyl group, was then carried out on the basis of the theory of lipophilic equivalent, and the synthesized 3-hydroxy-4-methoxybenzylpropylamine was found to be tasteless. An attempt was made to clarify the relationship between the chemical structure and sweet taste of these series of compounds on the basis of these facts. AS

34

Food consumption patterns: pressures toward a three commodity sweetener system.
Cantor, S. M.; Shaffer, G. E., Jr.
Cereal Science Today **19** (7) 266-272, 290-291 (1974) [7 ref. En] [Sidney M. Cantor Associates, Inc., Haverford, Pennsylvania, USA]

Average sweetener consumption patterns are examined in the context of total food consumption as well as some of the pressures creating this pattern, with a view to projecting possible influences on cereal sources of sweeteners and therefore, the shifting balance among cane, beets and corn. Consideration is given to historical highlights in the development of the current position with respect to sweeteners and to industrial developments in the starch and sugar industries. US food behaviour and consumption trends are discussed. Other aspects considered are: laevulose containing corn syrup; sweetener sources share of market; other influences on carbohydrate and sweetener consumption; metabolic problems, and non-nutritive sweeteners. VJG

35

The search for sweetness.
Chedd, G.
Nutrition and Food Science No. 38, 2-4 (1974) [En]

The safety and acceptability to consumers of synthetic sweeteners, such as saccharin, cyclamate, aspartame, chlorotryptophan and the taste active proteins, miraculin, monellin and thaumatin, are discussed. AA

36

Artificial sweeteners.
Alberto-Culver Co.
British Patent 1 371 711 (1974) [En]

Saccharin salt sweetener compositions incorporate calcium chloride to reduce bitter after-taste. IFT

37

Effect of subthreshold concentrations of limonin, naringin and sweeteners on bitterness perception.
Guadagni, D. G.; Maier, V. P.; Turnbaugh, J. G.
Journal of the Science of Food and Agriculture **25** (11) 1349-1354 (1974) [6 ref. En] [W. Regional Res. Lab., USDA, Berkeley, California 94710, USA]

A sensory panel determined taste thresholds of mixtures of limonin and naringin and various sweeteners. Data obtained showed that within the 95% confidence interval, subthreshold interactions between limonin and naringin were additive, indicating that less than threshold amounts of these compounds contributed to bitterness of a mixture. Mixtures of hesperetin dihydrochalcone glucoside (HDG), neohesperidin dihydrochalcone (NHD), naringin dihydrochalcone (ND), sucrose and naringin were neither additive nor synergistic at subthreshold concn. At suprathreshold levels, sucrose, HDG and NHD were effective in

suppressing naringin bitterness, but ND was not. AS

38

Sweetening properties of L-alanine tert-butyl ester.
Nofre, C.; Sabadie, J.; Bal, D.
Naturwissenschaften **61** (9) 404-405 (1974) [2 ref. En] [Fac. de Med., Lab. de Chimie, Lyon, France]

During the process of screening the methyl, ethyl, benzyl and tert-butyl esters of α-amino acids for sweetness, it was observed that L-alanine tert-butyl ester had an appreciably sweet taste. 17 tert-butyl ester hydrochlorides were tested. Only 2 were found to have a really sweet taste: (i) L-alanine tert-butyl ester hydrochloride and (ii) ter-butyl L-α-amino butyrate hydrochloride. tert-Butyl α-amino isobutyrate hydrochloride (2-methylalanine tert-butyl ester HCl) also had a slightly sweet taste but with a certain bitterness, making its taste threshold difficult to evaluate. Taste thresholds of (i) and (ii) were evaluated by the method of Harris & Kalmus [Annals of Eugenics (1949) **15**, 24] in comparison with 9 other known sweet compounds and results tabulated. (i) is approx. 40 times sweeter than sucrose on a molecular basis (or 75 times sweeter on a wt. basis), and is slightly sweeter than sodium cyclamate. (ii) is only 11 times sweeter than sucrose on a molecular basis, i.e. approx. one fourth as sweet as (i). VJG

39

The stereochemistry of sweetness.
Birch, G. G.; Lee, C. K.; Lindley, M. G.
Stärke **27** (2) 51-57 (1975) [15 ref. En, de, fr] [Nat. Coll. of Food Tech., Univ. of Reading, Weybridge, Surrey KT13 ODE, UK]

Conformational analogies between sugars, deoxy sugars, substituted sugars, glycosides and cyclitols are examined in relation to current hydrogen bond theories of sweetness. Although the sensory properties of saporous molecules are probably multifunctional in origin, hydrophilic and lipophilic substitutes vary in their effects. The former depend on configuration, wheras the latter may either enhance sweetness by strengthening binding to the taste bud protein or cause re-alignment of the molecule, eliciting a bitter response. AS

40

[Determination of sodium saccharin in foods by X-ray fluorescence analysis.]
Yamada, T.; Nakaoka, T.; Wada, Y.
Journal of the Food Hygienic Society of Japan [Shokuhin Eiseigaku Zasshi] **16** (1) 7-10 (1975) [10 ref. Ja, en] [Kanagawa Prefectural Public Health Lab., 52-2, Naka-cho, Asahi-ku, Yokohama, Japan]

A method for detn. of sodium saccharin in foods is described, based on extraction with acidic ether, separation by paper chromatography and quantitative detn. by X-ray fluorescence analysis. TM

41

Structural functions of taste in the sugar series.
Lindley, M. G.; Birch, G. G.
Journal of the Science of Food and Agriculture **26** (1) 117-124 (1975) [15 ref. En] [Nat. Coll. of Food Tech. (Univ. of Reading), Weybridge, Surrey, UK]

Shallenberger's sweetness hypothesis [FSTA (1969) **1** 12L652] in the sugars was tested by the selective blocking of single positions around a sugar ring with O-methyl groups and sensory evaluation of the products. The location of Shallenberger's AH, B system in certain sugar structures by the identification of superfluous hydroxyl groups was anticipated. Additionally, the AH, B system in β-D-fructopyranose responsible for the intense sweetness of the sugar is located by sensory and IR spectral evaluation of structurally analogous compounds. AS

42

Configuration, conformation and the properties of food sugars. (In 'Molecular structure and function of food carbohydrate'.) [Conference proceedings]
Birch, G. G.; Shallenberger, R. S.
pp. 9-18 (1973) [15 ref. En] London, UK; applied Science Publishers Ltd. [Nat. Coll. of Food Tech., Univ. of Reading, Weybridge, Surrey, UK]

Effects of configuration and conformation on various characteristics (optical properties, digestibility, toxicity, crystallization characteristics) of food sugars are discussed, with special reference to effects of configuration, conformation and multiple group stereogeometry on sweetness. The interrelation of sugar structure and food quality is briefly discussed. AJDW

43

Sodium N-(cyclopentylmethyl)-sulfamate: a new synthetic sweetener.
Nofre, C.; Pautet, F.
Naturwissenschaften **62** (2) 97 (1975) [7 ref. En] [Fac. de Med., Lab. de Chimie, Lyon, France]

The authors replaced the cyclohexyl group of cyclamates by a cyclopentylmethyl group. Cyclopentylmethylsulphamates (CPMS) are unlikely to be carcinogenic as they cannot metabolically liberate a cyclic amine. The Na and Ca salts of CPMS are soluble and stable in water, and have a sweetening ability which differs with concn., e.g. the Na salt at a concn. of 0.06 g/l. (absolute threshold) is 60 × sweeter than sucrose but at 4 g/l. is only 10 × sweeter; above 4 g/l. an off-taste appears. An association of the Na salt with saccharin (10:1 ratio) yielded a sweetness equivalent to 110 g/l. sucrose without any off-taste or after-taste. AL

44

[Artificial sweeteners.] Künstliche Süssstoffe. [Review]
Steinle, G.
Zucker **28** (1) 20-28 (1975) [134 ref. De, en, fr] [Zentral Lab. der Süddeutschen Zucker AG, 6719 Obrigheim 5, Wormser Strasse 1, Federal Republic of Germany]

The following synthetic sweeteners are reviewed with information on their degree of sweetness and possible toxic side effects: saccharin, dulcin, cyclamate, stevioside, perillartine, "Ultrasweet" P400, product S23/46, Suosan, glucin, monellin and thaumatin, miraculin and osladin, dihydrochalcone, hydrofluorene derivatives and glycyrrhizin, DL-tryptophan, kynurenine derivatives, aspartame, glykergenic acid and acetosulpham. RM

45

[Sweetening agent.]
Hayashibara Co. Ltd.
Japanese Patent 4 948 507 (1974) [Ja]
Artificial sweeteners comprise 4-0-β-D-galactopyranosyl-L-D-fructose. IFT

46

Structural functions of taste in the sugar series. Sugar-amino acid interaction as an index of sugar sweetness.
Lee, C. K.; Mattai, S. E.; Birch, G. G.
Journal of Food Science **40** (2) 390-393 (1975) [34 ref. En] [Nat. Coll. of Food Tech., Weybridge, Surrey, UK]
Investigations showed a direct correlation between the specificity of binding of various sugars and the specificity of behavioral responses of animals to the sugars, thus suggesting that specificity for taste stimuli exists in the peripheral taste receptors and that binding is not due simply to nonspecific entrapment. If such is the mechanism of taste stimulation, then a similar complexing might be expected between sugars and the simpler amino acids. This paper describes an investigation of such a system. [See also FSTA (1975) 7 1L86.] IFT

47

Substitutes for sugar.
Anon.
British Food Journal **77** (864) 5-6, 18 (1975) [En]
Production of sugar from sources other than the traditional sugar cane and sugar beet is discussed, with reference to: hydrolysis of starch; D-glucose (dextrose) and glucose syrup (liquid glucose); sweetness of starch hydrolysis products and low-calorie sweeteners; regulations; and natural sweeteners (glycyrrhizin, sorbitol, rebaudin, SE54, SE150, African serendipity berry) and synthetic sweeteners (aspartame, L-aspartyl-L-phenylalanine methyl ester, neohesperidin dihydrochalcone). AA

48

Sweetener outlook.
Andres, C. L.
Food Processing **35** (12) 34-37 (1974) [En]
The future of the sweetener industry is discussed and it is predicted that: sugar prices will drop to 50% of the current high prices within the next 2 years; there will be an increase in the production and consumption of high fructose corn syrup; and there will be an increase in the use of lactose as a sweetener. AA

49

[Nutritional and health aspects of sugar consumption.]
Lammers, W. G. A.
Bedrijfsontwikkeling **5** (11) 993-994 (1974) [Nl] [Centrale Suiker Maatschappij, Amsterdam, Netherlands]
Aspects considered in this paper include: the importance of sugar as a source of dietary calories; sugar as a sweetener; the relation of sugar consumption to obesity, cardiovascular disease, caries and other diseases; psychological aspects; and trends in the importance of sugar in the diet in the Netherlands and other countries. AJDW

50

Low calorie sweetener and sweetener base.
Schieweck, H.; Steinle, G.; Haberl, L. (Süddeutsche Zucker AG)
United States Patent 3 865 957 (1975) [En]
Low calorie sweetening agent contains crystalline isomaltitol as the major component. IFT

51

Composition of matter containing paramethoxycinnamaldehyde as a flavoring agent and sweetener.
Neely, J. S.; Thompson, J. A. (Procter & Gamble Co.)
United States Patent 3 867 557 (1975) [En]
Sweetening compositions contain 0.0001-20.0% paramethoxycinnamaldehyde. IFT

52

[Some physiological and psychophysical observations concerning the taste perception of test subjects.]
Kouwenhoven, T.
Mededelingen, Landbouwhogeschool, Wageningen No. 74-13, 86pp. (1974) [many ref. Nl, en] [Landbouwhogeschool, Wageningen, Netherlands]
After discussing factors affecting choice of food, the reasons for sensorial experiments, and threshold values, the author describes his own experiments. These showed that the mean threshold values resulting from an arbitrarily increasing series of 15 concn. of taste substances (sucrose, lactic acid and NaCl) were identical to those from a geometrical progression of 12 concn. An experiment involving demineralized water as placebo showed that the pattern of incorrect responses to the placebo varied between good and poor tasters: good tasters tended to describe it as sweet and poor tasters as bitter. The effects of training and experience on taste perception were also studied, as well as the effects of colour. ADL

53

Estimating sweeteners in frozen desserts.
Pearson, A. M.; Bigga, D. A.
Dairy and Ice Cream Field **157** (7) 36-37, 67 (1974) [2 ref. En] [Dept. of Food Sci., Univ. of Guelph, Ontario, Canada]

This is a rapid refractometric method for estimating the amount of sweeteners in frozen dessert mixes. It is only suitable for in-plant control purposes where the overall mix composition is known. JR

54

Novel dipeptide ester compounds.
Takeda Chemical Industries Ltd.
British Patent 1 367 491 (1974) [En]

The dipeptide ester incorporates a tertiary butyl or amyl group and their salts. The compound can be used as a sweetener. HBr

55

Decomposition products of L-aspartyl-L-phenylalanine methyl ester and their identification by gas-liquid chromatography.
Furda, I.; Malizia, P. D.; Kolor, M. G.; Vernieri, P. J.
Journal of Agricultural and Food Chemistry **23** (2) 340-343 (1975) [8 ref. En] [Tech. Center, General Foods Corp., White Plains, New York 10625, USA]

Samples of L-aspartyl-L-phenylalanine methyl ester (APM) [a new dipeptide sweetener] and APM hydrochloride were stored in aqueous solutions and their degradation products were identified by GLC and MS as their trimethylsilyl derivatives. Although both compounds furnished the same decomposition pattern, their degree of decomposition differed considerably. It is believed that the low pH of the APM hydrochloride solution is the primary reason for its instability. AS

56

Saccharin: lack of chromosome-damaging activity in Chinese hamsters in vivo.
Went-De Vries, G. F. van; Kragten, M. C. T.
Food and Cosmetics Toxicology **13** (2) 177-183 (1975) [46 ref. En] [Lab. of Pharmacol., Nat. Inst. of Public Health, PO Box 1, Bilthoven, Netherlands]

No statistically significant increase in chromosomal abnormalities was noted following oral administration of a high dose of saccharin (1.5 g/kg/day for 3 days) to Chinese hamsters. VJG

57

[Sugar substitute.]
Leroy, R.; Huchette, M. (Roquette Freres)
French Patent Application 2 201 081 (1974) [Fr]

Sorbose is used as a sugar substitute. It is shown that sorbose has no toxic effects, does not modify the blood sugar level, does not lead to the formation of acids or a lowering of pH by the action of bacteria in the mouth, and possesses satisfactory sweetening and organoleptic properties. It can be used as a sweetener in food products, particularly for diabetics, and in low calorie confectionery. W&Co

58

Instant beverage article.
Heonis, A. A.
United States Patent 3 869 555 (1975) [En]

An instant beverage article, suitable for the preparation of a liquid beverage upon addition to a liquid, comprises a stick having bonded at one end a quickly dissolvable solid base mass containing coffee, tea, cocoa, eggnog or chocolate and having an adjacent flavouring mass containing a suitable sweetening agent which may be manually removed from said stick if an unsweetened beverage is required. IFT

59

A process for the preparation of powdered maltitol.
Kowa Co. Ltd.
British Patent 1 383 724 (1975) [En]

An aqueous maltitol solution is thickened to yield a paste which is dried by spray- or vacuum-drying. The product is for use as a sweetener, particularly in low-calorie diets. IFT

60

[Millet jelly sweetener.]
Hayashibara, Co. Ltd.
Japanese Patent 5 002 746 (1975) [Ja]

A low viscosity millet jelly obtained by hydrolysing high amylose starch is employed in the sweetening of beverages or foods. IFT

61

[Dipeptide sweeteners.]
Takeda Chemical Industries Ltd.
Japanese Patent 5 002 027 (1975) [Ja]

Dipeptide sweeteners comprise carbobenzoxy β-benzyl L-aspartyl L-serine alkyl esters. IFT

62

Intense sweetener from Lo Han Kuo (Momordica grosvenori).
Lee, C.-H.
Experientia **31** (5) 533-534 (1975) [10 ref. En, de] [Central Res. Dept., General Foods Corp., White Plains, New York 10625, USA]

Lo Han Kuo, from Momordica grosvenori Swingle, is a dried fruit produced in S. China. The fruits are gourd-like (6-11 × 3-4 cm), dark brown with broadly rounded ends, thin rind (0.5-0.8 mm) and with brownish-grey pulp which is dried to a light fibrous mass. The sweet principle can be extracted by water or 50% ethanol from the fibrous pulp or the rinds, the latter giving a more easily

purified extract. After extraction the suspension was centrifuged, fractionated by ultrafiltration and then through a Sephadex G-25 column, freeze-dried and examined by TLC. A major component had an Rg (relative to glucose) value of 0.67. An aqueous extract of the fruit can alternatively be passed through an Amberlite XAD-2 resin which retains the sweetener, which can be easily eluted with 50% ethanol. The sweetness of Lo Han sweetener was accompanied by a lingering licorice-like taste, estimated potency was about 150 times sweeter than sucrose, and preliminary toxicological studies showed an LD50 of >10 g/kg mice. Chemical and spectrographic studies indicated the sweetener component to be a glycoside of a triterpenoid. AL

63

Dipeptide sweetener.
Berg, J. H.; Trumbetas, J. (General Foods Corp.)
United States Patent 3 868 472 (1975) [En]
Process for improving the rate of solubility of dipeptide sweeteners involves co-grinding the dipeptide with a dry acid in a volatile organic solvent to effect at least partial coating of the dipeptide. IFT

64

Dipeptide sweetner.
Eisenstadt, M. E. (Cumberland Packing Corp.)
United States Patent 3 875 311 (1975) [En]
Dipeptide sweeteners contain bitartrate or bicarbonate salts, together with glocono-delta-lactone or a gluconate salt. IFT

65

Dipeptide sweetner.
Eisenstadt, M. E. (Cumberland Packing Corp.)
United States Patent 3 875 312 (1975) [En]
Dipeptide sweetening compositions contain bitartrate or bicarbonate salts, together with lactone or dextrose. IFT

66

Aspartame: a new dimension for controlling product sweetness.
McCormick, R. D.
Food Product Development 9 (1) 22, 27, 36 (1975) [7 ref. En]
Chemical and physical properties of aspartame are briefly described. Applications considered are: calorie reduction in numerous foods, and beverages; flavour enhancer for chewing gum; alteration in sweetness of conventional products without significant changes in other characteristics; and new types of pourable salad dressings since aspartame is compatible with acid fruits. Taste considerations and safety and legal status are also briefly considered. VJG

67

Long-term administration of artificial sweeteners to the rhesus monkey (M. mulatta). [Letter]
Coulston, F.; McChesney, E. W.; Golberg, L.
Food and Cosmetics Toxicology 13 (2) 297-300 (1975) [26 ref. En] [Inst. of Comparative & Human Toxicol., Albany Med. Coll. of Union Univ., Albany, New York 12208, USA]
Experiments aimed at determining the potential carcinogenic activity of artificial sweeteners (cyclamate and saccharin) using rhesus monkeys are described. The authors conclude that their experience to date tends to reinforce the mounting evidence of non-carcinogenicity of cyclamate and saccharin. VJG

68

L-Glutamic and L-aspartic acids - a question of hazard? [Letter]
Bigwood, E. J.
Food and Cosmetics Toxicology 13 (2) 300-301 (1975) [3 ref. En] [Food Law Res. Centre, Inst. of European Studies, Univ. Libre de Bruxelles, Avenue F.-D. Roosevelt 39, 1050 Bruxelles, Belgium]
Claims made by Olney & Ho [FSTA (1970) 2 12T451] following observations of irreversible necrosis in the hypothalamic neurons in the brains of 10 day-old mice given a single oral dose of glutamic or aspertic acid, that the health of young children could be adversely affected by the consumption of these compounds, are questioned. The relevance of the recent development of the sweetening agent, aspartame, to the question of aspartic acid consumption, is stressed. VJG

69

[Cycloalkylsulphamic acids and their salts. IV.]
Cycloalkylsulfaminsäuren und ihre Salze. IV.
Unterhalt, B.; Böschemeyer, L.
Zeitschrift für Lebensmittel-Untersuchung und -Forschung 158 (1) 35-36 (1975) [3 ref. De, en] [Fachbereich Pharmazie und Lebensmittelchemie, Univ., Marburg/Lahn, Federal Republic of Germany]
The sodium salts of cis- and trans-2-methyl-cycloxylsulphamic acid were synthesized and tasted. There was no difference in their degree of sweetness. [See FSTA (1973) 5 1T25 for part III.] AS

70

Processes for the production of foods and beverages.
Hagashibara, K.
British Patent 1 390 065 (1975) [En]
Processes are described for the manufacture of food and beverages using sweetening agents in which oligo-glucosyl-fructosides sweeteners are the

main constituents. The sweeteners are produced by treating a mixture of partially hydrolysed starch and fructose and/or sucrose with glucosyl transferase or by admixing fructose and/or sucrose to a partially hydrolysed starch having a dextrose equivalent of ≥15. Examples of the preparation of about 20 foods and beverages using the sweeteners are given, covering inter alia ice cream, instant soup, coffee milk drinks, cultured milks, bread, candies, dried juice, sponge cakes, condensed sweetened milk, chocolate and sweetened dried milk. FL

71

[New methods of evaluation of the relative sweetening power of sugars and artificial sweetening agents.] [Lecture]
Herrmann, J.
pp. 234-250 (1974) [13 ref. Fr, de, en] [Sektion Nahrungsgüterwirtschaft und Lebensmitteltech., Humboldt-Univ. zu Berlin, 104 Berlin (GDR)]

Equations are presented for quantitative evaluation of degree of perception from concn. of aroma and flavour substances and vice versa. It is claimed that this new method of 'subjective gustometry and olfactometry' permits calculation of sweetening power of pure sugar solutions, mixtures of different sugars and of acidified sugar solutions, as well as the relative sweetening power of sugars. [See 7 11T524.] SKK

72

Nonabsorbable, non-nutritive sweeteners.
Zaffaroni, A. (Dynapol)
United States Patent 3 876 816 (1975) [En]

A nonabsorbable, non-nutritive, water-soluble sweetener composition comprises an active sweetening agent covalently bonded to a non-metabolizable controller molecule having a 3-dimensional space-occupying group too large to be absorbed through the mucosa of the gastrointestinal tract. IFT

73

Artificail sweetener.
Crosby, G. A.; Saffron, P. M. (Dynapol Corp.)
United States Patent 3 976 814 (1975) [En]

Foods are sweetened by incorporation of 3,amino-4-N-propoxybenzyl alcohol. IFT

74

Sweet-tasting and sweetness-inducing protein from fruits of African plants. [Lecture]
Wel, H., van der; Brouwer, J. N.; Iongh, H. de
pp. 154-161 (1974) [16 ref. En, de, fr] [Unilever Res., Oliver van Noortlaan 120, Vlaardingen, Netherlands]

The occurrence and appearance of 2 tropical plants (Thaumatococcus daniellii Benth and Dioscoreophyllum cumminsii) bearing intensely) sweet-tasting fruits and of a shrub (Synsepalum dulcificum), producing berries with sweetness-inducing properties are briefly discussed. 2 sweet-tasting substances with a liquorice after-taste, Thaumatin I and II, were isolated from the fruits of Thaumatococcus daniellii Benth by aqueous extraction, ultrafiltration, gel filtration and ion exchange chromatography. The sweetness intensity is about 1600 × that of sucrose on a wt. basis. Monellin was isolated from serendipity berries (Dioscoreophyllum cumminsii) by aqueous extraction, ethanol precipitation, ultrafiltration and gel filtration. The sweetness intensity is 2000 × that of sucrose on a wt. basis. Miraculin was isolated from Synsepalum dulcificum and although this protein has no sweetness inducing properties it can change a sour taste into a sweet taste. Thaumatin and monellin are useful for sweetening soft drinks. The long lasting sweetness inducing effect of miraculin will probably restrict its application in foods and drinks. [See 7 11T524.] GL

75

[Present and expected use of artificial sweeteners in Hungary.] Gegenwärtiger und zukünftiger Verbrauch an künstlichen Süssstoffen in Ungarn. [Lecture]
Lindner, K.
pp. 210-214 (1974) [De, fr, en] [Lehrstuhl für Ernährungswissenschaft, Hochschule für Binnenhandel und Gaststättenwesen, Alkotmany-u. 9-11, Budapest V, Hungary]

To the beginning of Sept. 1969, cyclamate was used in Hungary in some detetic foods (canned fruit, chocolate, fruit juices) at a content of 0.2-1.3%; the total use in 1969 in diabetic foods amounted to approx. 5 t. In future, an unobjectionable calorie-free sweetener will be increasingly required for low-calorie foods. [See 7 11T524.] SKK

76

[Saccharin: chemistry, physiology and use by diabetics.] Saccharin: Chemie, Physiologie, Applikation bei Diabetikern. [Lecture]
Slabochova, Z.; Platilova, H.
pp. 215-222 (1974) [De, en, fr] [Inst. für Klinische und Expt. Med., Prague 4-Krc, Budijovicka 800, Czechoslovakia]

It is concluded from experiments by modern techniques on 6 healthy adult men and 6 men with slight diabetes that saccharin used in customary doses has no metabolic effects. [See 7 11T524.] SKK

77

o-Toluenesulfonamide in saccharin preparations.
Stavric, B.; Klassen, R.
Journal of the Association of Official Analytical Chemists 58 (3) 427-432 (1975) [6 ref. En] [Toxicology Res. Div., Health Protection Branch, Health and Welfare Canada, Ottawa, Ontario K1A OL2, Canada]

20 saccharin-containing table sweeteners, in the

form of tablets, liquids, crystals, or blends, and manufactured or distributed by 15 different companies, were analysed for their o-toluenesulphonamide (o-TS) content. A previously described procedure for determination of o-TS in commercial saccharin [FSTA (1974) 6 10T551] was found to be applicable to determination of o-TS in these preparations. o-TS was found in all analysed samples, in amounts ranging from 57 to 3811 ppm. In some cases the concn. of o-TS varied even from lot to lot from the same manufacturer. 1 pair of lots contained 57 and 67 ppm o-TS, respectively, while in another 711 and 3003 ppm o-TS were found. GLC patterns of samples from the same distributor (or manufacturer) were similar and characteristic of the brand. Recoveries of o-TS from liquid and tablet preparations were almost quantitative, while recoveries from saccharin blends were in the 95-103% range. AS

78

A dextrin-dextrose-saccharin mixture as an alternative sweetener to sucrose. [Lecture]
Bruckdorfer, K. R.; Yudkin, J.
pp. 222-226 (1974) [9 ref. En, de, fr] [Dept. of Nutr., Queen Elizabeth Coll., London W8 7AH, UK]

A sweetener with ⅓ calorific value of sucrose developed by the Tenstar division of Rank-Hovis-McDougal Ltd., is discussed. The sweetener consists of a mixture of partially hydrolysed wheat starch and saccharin, which gives the mixture its sweetening power; the product is spray-dried to give the appearance of sucrose. Dextrin and dextrose are present and reduce the bitter after-taste of saccharin. GL

79

[Determination of the sweetness of saccharin.] Neuermittlung der Süsskraft von Saccharin.
Fricker, A.; Gutschmidt, J.; Prochazka, E.
Deutsche Lebensmittel-Rundschau 71 (4) 138-139 (1975) [6 ref. De, en, fr]
[Bundesforschungsanstalt für Ernährung, Karlsruhe, Federal Republic of Germany]

The taste threshold of saccharin was evaluated by the triangle test; saccharin concn. tested were 1.5-50 mg/l. The average taste threshold was approx. 4-5 mg/l. Studies on the sweetness of saccharin and sodium saccharin (relative to sucrose) were conducted, using reference samples of solutions containing 1-8% sucrose. The results agreed well with literature data, saccharin having a sweetening power ≤700 × that of sucrose, and sodium saccharin having a sweetening power ≤550 × that of sucrose. A clear effect of concn. on the sweetness of saccharin was observed, sweetening power (relative to sucrose) decreasing with increasing concn. Temp. in the range 5-60°C had no significant effect on sweetness. Saccharin in grapefruit juice (pH 3.05) tasted approx. 20% sweeter than the same concn. of saccharin in water. AJDW

80

[Toxic, cytogenetic and teratogenic action of cyclamate and its metabolites.] [Lecture]
Lederer, J.; Pottier-Arnould, A. M.; Collin, J. P.; Gondry, E.
pp. 173-195 (1974) [many ref. Fr, de, en] [Ecole de Sante Publique, Univ., Louvain, Belgium]

The relevant literature is thoroughly reviewed and results of own tests are reported. Sodium cyclamate administered under conditions required by FAO/WHO (innocuity at 100 × the dose/kg body wt. likely to be ingested by man, when administered during at least half of the natural life of 3 animal spp., including at least 2 spp. of rodents) caused growth retardation in male mice and inhibition of development in female mice. In the pregnant rat, it caused serious ocular anomalies in the embryo; and it had cytogenetic effects in vitro on human leucocytes and in vivo at bone marrow level in adult rats and embryos. Cyclohexylamine in concn. of 0.1, 0.5 or 1.0% in mouse food caused considerable rise in infant mortality, and growth inhibition more marked in the females; the compound showed a slight diabetogenic effect on rats. Cyclohexanol and cyclohexanone added at 1% to food caused increase in infant mouse mortality but only slight growth inhibition; they had in vitro a cytogenetic effect on human leucocytes. SKK

81

[Physiological and toxicological aspects of cyclamate use.] Zyklamate, physiologische und toxikologische Aspekte einer Verwendung. [Lecture]
Hellauer, H.; Göttinger, E.; Hagmüller, K.
pp. 195-209 (1974) [24 ref. De, fr, en]
[Parkstrasse 10, A-4540 Bad Hall, Austria]

Literature data on cyclamate tolerance in man and adult animals are reviewed. It is concluded from literature information (including published work by the authors) and from own unpublished experiments that cyclamate causes in rabbits a considerable decrease in blood coagulation factors and that it may be regarded as a true hepatotoxin for guinea-pigs and rabbits. The sweetening power and taste of cyclamate are discussed in relation to those of sucrose. SKK

82

[Artificial sweetener.]
Ajinomoto Co. Inc.
Japanese Patent 5 005 702 (1975) [Ja]

Process employing phenylalanine as an intermediate in the production of an artificial sweetener is described. IFT

83

[Comparison of international legislation on use of some natural and synthetic additives.] [Lecture]
Rochize, S.
pp. 226-232 (1974) [Fr, de, en] [Service de la

Repression des Fraudes et du Controle de la Qualite, Ministere de l'Agriculture et du Development Rural, Paris 7e, France]

Definitions of additives and different systems of legislation concerning additives are outlined. Legislation on amino acids in France, Belgium and Italy; on natural sweeteners in France, Belgium, Italy and Switzerland; and on artificial sweeteners in France, Belgium, Italy and the USSR are considered] SKK

84

[Bakery products for diabetics and low-calorie products.]
Swiechowski, C.
Przeglad Piekarski i Cukierniczy **23** (3) 62-67 (1975) [16 ref. Pl]

Application of sweeteners (fructose, sorbitol, xylitol, saccharin, cyclamates) to confectionery and bakery products is discussed. Low-calorie products can be produced by increasing the moisture content of the products, replacing high-calorie raw materials with low-calorie materials, increasing the vol. of the products with simultaneous reduction in the nutritional value, and adding proteins as a substitute for fats. STI

85

The preparation of immobilized lactase and its use in the enzymatic hydrolysis of acid whey.
Weetall, H. H.; Havewala, N. B.; Pitcher, W. H., Jr.; Detar, C. C.; Vann, W. P.; Yaverbaum, S.
Biotechnology and Bioengineering **16** (3) 295-313 (1974) [3 ref. En] [Res. & Development Lab., Corning Glass Works, Corning, New York 14830, USA]

Acid whey cheese, after ultrafiltration to remove proteins, was treated with a yeast lactase immobilized on zirconia-coated porous glass particles, and was subsequently treated with bound glucose isomerase to yield a product containing 10% TS, with 1% lactose, 45% galactose, 20% fructose and approx. 25% glucose in the DM. This product was used as a sweetener for making ice cream; it was acceptable apart from its high salt content. JMD

86

Gas chromatographic determination of micro-amounts of cyclamates.
Nagasawa, K.; Ogamo, A.; Shinozuka, T.
Journal of Chromatography **111** (1) 51-56 (1975) [9 ref. En] [School of Pharmaceutical Sci., Kitasato Univ., Shirokane 5-9-1, Minato-ku, Tokyo 108, Japan]

It was found that triethylammonium cyclamate is converted to N-heptafluorobutyrylcyclohexylamine in a high and constant yield by reaction with heptafluorobutyric anhydride at 90°C for 1 h, and gas chromatography of the product gives a sharp peak that is highly sensitive to an electron capture detector. A useful method for the micro-determination of cyclamates was established by combining this reaction with gas chromatography

87

[Xylitol. Significance, action, uses.] Xylit. Bedeutung, Wirkung, Anwendung. [Review]
Kracher, F.
Kakao und Zucker **27** (3) 68-70, 72-73, 75; (4) 108-110, 112 (1975) [74 ref. De] [Givaudin Dübendorf AG, 86 Dübendorf/Zürich, Switzerland]

The potential for use of xylitol as a sweetener in foods is discussed, with reference to its manufacture, structure, physical properties, chemical properties, organoleptic properties, physiological characteristics, legal aspects and applications in beverages, chocolate, confectionery, puddings, dairy products (milk-based drinks, yoghurt, ice cream), jams, bakery products, marinades and sauces. AJDW

88

[Detection of sodium saccharin, sodium cyclamate and dulcin in foods by thin layer chromatography.]
Mihashi, Y.; Kobayashi, F.
Annual Report of the Tokyo College of Pharmacy [Tokyo Yakka Daigaku Kenkyu Nenpo] **22**, 159-164, 228 (1972) [13 ref. Ja, en]

The sweeteners could be separated from each other on cellulose/polyamide (3:2) with toluene/propanol/formic acid (15:5:1) as solvent. They could also be separated and distinguished from other additives (e.g. preservatives and antioxidants) on the same absorbent using various reagents and UV fluorescence, and could be detected after addition to orange juice, coffee, carbonated beverages, fermented milk or jam. [From En summ.] DMK

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19	Disposal of Waste Food Products	□ £12.00	□ £5.00	□ £9.00
20	Use of Glucose in Food Products	□ £8.00	□ £3.0 0	□ £6.00
21	Emulsifiers in Foods	□ £9.00	□ £3.00	□ £7.00
22	Stabilizers in Foods	□ £9.00	□ £3.00	□ £7.00
23	Staling and Antistaling Additives	□ £8.00	□ £3.00	□ £6.00
24	Catering Industry	□ £8.00	□ £3.00	□ £6.00
25	Antioxidants	□ £9.00	□ £3.00	□ £7.00
26	Nitrosamines	□ £8.00	□ £3.00	□ £6.00
27	Content and Analysis of Mercury in Foods	□ £6.00	□ £3.00	□ £7.00
28	Content and Analysis of Lead in Foods	□ £7.00	□ £3.00	□ £6.00
29	Heatable Packs	□ £6.00	□ £3.00	□ £6.00
30	Sulphur Dioxide in Food Products	□ £8.00	□ £3.00	□ £6.00
31	Lactic Acid Bacteria in Beverages and Food	□ £11.00	□ £3.00	□ £8.00
32	Colorants	□ £9.00	□ £3.00	□ £6.00
33	Browning of Foods	□ £8.00	□ £3.00	□ £6.00
34	Aflatoxins	□ £7.00	□ £3.00	□ £7.00
35	Antibiotic Properties and Residues in Food excluding Nisin	□ £8.00	□ £3.00	□ £6.00
36	Nisin	□ £6.00	□ £3.00	□ £6.00
37	Cadmium in Foods	□ £6.00	□ £3.00	□ £6.00
38	Coffee	□ £10.00	□ £3.00	□ £7.00
39	Sorbic Acid	□ £7.00	□ £3.00	□ £6.00
40	Arsenic in Foods	□ £6.00	□ £3.00	□ £6.00
41	Ascorbic Acid	□ £5.00	□ £3.00	□ £8.00
42	Thickeners and Gelling Agents	□ £4.00	□ £3.00	□ £6.00
43	Pseudomonadaceae and Food Processing	□ £5.00	□ £3.00	□ £6.00
44	Spores in Food	□ £3.00	□ £3.00	□ £7.00
45	Breadmaking	□ £9.00	□ £3.00	□ £6.00
46	Bread Properties	□ £8.00	□ £3.00	□ £6.00
47	Food Science and Technology Books	□ £11.00	□ £6.00	□ £12.
48	Nitrates and Nitrites in Meat Products	□ *£4.00	□ £3.00	□ £7.00
49	Eggs & Poultry Meat	□ *£8.00	□ £6.00	□ £10.
50	Mycotoxins in Foods (Excluding Aflatoxins & Microbial Toxins)	□ £4.00	□ £3.00	□ £6.00
51	Meat Canning	□ *£4.00	□ £3.00	□ £7.00

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